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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,020	03/15/2004	Tatsuhiko Nonoyama	461-168	6803

23117 7590 11/19/2007  
NIXON & VANDERHYE, PC  
901 NORTH GLEBE ROAD, 11TH FLOOR  
ARLINGTON, VA 22203

EXAMINER
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KOSLOW, CAROL M

ART UNIT	PAPER NUMBER
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1793

MAIL DATE	DELIVERY MODE
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11/19/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/800,020

Applicant(s)

NONOYAMA ET AL.

Examiner

C. Melissa Koslow

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1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2007 and 19 October 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

This action is in response to applicants' amendments of 18 and 19 October 2007. The amendments to the claims have overcome the objection over claim 14. Applicant's arguments with respect to the art rejection have been fully considered but they are not persuasive.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-7 and 9-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent application publication 2003/0008762 and U.S. patent 6,692,652.

U.S. patent application publication 2003/0008762 was issued as U.S. patent 6,692,652.

These references teach crystal or grain oriented ceramics composed of polycrystalline body of an alkali pentavalent perovskite having the formula  $(\text{Na}_{1-x-t}\text{Li}_x\text{K}_t)(\text{Nb}_{1-y-z}\text{Ta}_y\text{Sb}_z)\text{O}_3$ , where x is 0-1, t is 0-1, y is 0-1 and z is 0-1, in which the {100} crystal plane of the grain has a degree of orientation, according to the Lotgering method, of 30% or more. The formula is based on the teachings in column 4, lines 32-45 and column 7, lines 6-29 and claim 1. This formula encompasses and thus suggests the claimed formula. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). Given the overlap, one of ordinary skill in the art would expect the taught ceramic having the overlapping composition to inherently have the crystal system of claim 13, absent any showing to the contrary. The examples show that the grain oriented alkali pentavalent perovskite ceramics have a  $d_{31}$  and a  $g_{31}$  at least 1.1 times these constants in non-oriented alkali pentavalent perovskite ceramics. Given this teaching, one of ordinary skill in the art would expect the suggested

ceramics, having the overlapping composition, to inherently have improvement rates and differences that at least overlap the claimed ranges of claims 1, 3-7 and 9-12.

The references teach producing this ceramic by mixing an anisotropic shaped powder, such as platelike crystals, which has a crystal growth plane that has lattice coherency with a specific crystal plane with a reaction material that can react therewith to form the taught ceramic, molding the mixture so the anisotropic shaped powder is oriented and heat treating the molded mixture to cause the mixture to react and form the ceramic. Column 4, lines 38-45 teaches the anisotropic powder can have the formula  $(\text{Na}_{1-x-t}\text{Li}_x\text{K}_t)(\text{Nb}_{1-y-z}\text{Ta}_y\text{Sb}_z)\text{O}_3$ , where  $x$  is 0-1,  $t$  is 0-1,  $y$  is 0-1 and  $z$  is 0-1, which encompasses that claimed.

As stated above, these references suggest the claimed ceramic. Paragraph [0155] and column 23, lines 11-19 teach the taught grain oriented alkali pentavalent perovskite ceramics are suitable as piezoelectric or dielectric materials. Accordingly, one of ordinary skill in the art would have found it obvious to use the taught ceramic in piezoelectric or dielectric elements. The references suggest the claimed ceramic, process and elements.

Applicants argue the claimed ceramics having unexpected properties and that the taught ceramics do not have the claimed properties, but they have not shown that the taught ceramics do not have these argued properties or overlapping values of the claimed properties. The rejection is maintained.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at (571) 272-1233.

The fax number for all official communications is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

cmk  
November 16, 2007

  
C. Melissa Koslow  
Primary Examiner  
Art Unit 1793